ADDRESSING THE ENVIRONMENT TO REDUCE OBESITY

James O. Hill, Ph.D.

An Epidemic of Obesity

Obesity has already reached epidemic proportions in the United States and is increasing at an alarming rate worldwide (1,2). Obesity rates are increasing in all segments of the population, regardless of age, ethnicity or education level (1).

While some obesity has always existed in the population, it is only in recent decades that obesity rates have risen to the level of becoming a major threat to public health. While it seems that the epidemic of obesity has "exploded" into the public health arena, the obesity epidemic likely developed gradually over a period of several decades. For example, Hill et al. (3) examined the rate of weight gain in the population over the past 7-10 years. Using both cross-sectional and longitudinal data sets, they found that the average America adult has gained an average of 1-2 pounds per year during that period. They further estimated that most of the weight gain in the population could be explained by a very small degree of positive energy balance, of the order of 100 kcal per day.

What has changed either in human physiology or in the environment to allow the degree of positive energy balance that has produced the gradual increase in the weight of the America population? While genetic factors contribute significantly to body weight and body weight regulation, it is difficult to ascribe the majority of the blame for the obesity epidemic to genes or even to biology. Our biology has just not changed sufficiently to explain the weight gain over time. Our gradual population weight gain is more likely due to factors within the environment that have influenced our behaviors in such a way as to "overwhelm" our physiological regulation of body weight. There are

many examples of how our food and physical activity environments have changed over the past half century. Unlike our distant ancestors we have a constant food supply that readily accessible, very energy dense and inexpensive. Also unlike our distant ancestors, we have to expend very little physical activity to secure food. We also have to expend very little energy to secure shelter and very little physical activity for transportation. While our distant ancestors were challenged to get sufficient energy intake to meet a necessarily high level of energy expenditure, our challenge is the opposite. Most Americans are attempting to restrict energy intake in order to match a very low level of energy expenditure.

The recognition of the role of the environment in promoting weight gain and obesity is an important milestone in addressing the obesity epidemic (4). The answer to dealing with obesity may lie much more in "fixing" the environment than in "fixing" human biology.

Defining the environment

While we recognize that the environment in which we live facilitates weight gain, it may be useful to look at the difference components that constitute what we refer to as the "environment".

1. The **built environment** includes how we build our communities, our transportation systems, architectural design, use of land, parks, and public spaces.
2. The **commercial environment** includes the goods and services that we are constantly tempted to buy, including products that affect our energy intake and energy expenditure.

3. There is the **policy environment** that directly and indirectly affects patterns of food intake and physical activity in the population.
4. Finally there is the **social and cultural environment**. This could be the most powerful part of the environment since this is a reflection of our social and cultural norms, which dictate the strength of political will for change.

Our Current Environment

Let's first consider what today's environment looks like. Each component of our environment facilitates obesity. We build communities that discourage physical activity and encourage automobile use. We build neighborhoods without sidewalks, further discouraging walking. We design our buildings for elevator and escalator use and not for stair use. Our commercial environment involves having food available everywhere at low cost. We heavily advertise food, especially to children. Many schools contain vending machines with many high energy density foods and some schools even have fast food outlets. Our commercial environment also heavily promotes activities and products that discourage physical activity. We heavily advertise automobiles, home entertainment systems, and other sedentary forms of entertainment. Our current policy environment is one that encourages, through agriculture subsidies, consumption of high energy dense, manufactured foods and discourages consumption of fruits and vegetables. Our policies have allowed for the virtual elimination of physical education in schools. Our transportation policies have favored use of personal automobiles at the expense of other forms of more physically active transportation. Finally, our social and cultural environment is driven by our materialistic goals. Our society is currently devoted to increasing availability of goods and services – at the lowest possible price. Both political

parties support increasing the GDP. In summary, our environment is uniformly one that promotes consumption of food and discourages physical activity. Our physiological systems for achieving energy balance and keeping body weight at a healthy level are not sufficiently strong to function within such an environment.

The Future: What would an environment that facilitated healthy lifestyles and healthy weights look like?

We have recognized that it is our environment that must be fixed if we are going reverse our epidemic of obesity. Where do we begin and what would success look like? We must begin to seriously investigate how to change each component of the environment to make it conducive to healthy lifestyles and healthy weights. It may be helpful to begin to "paint a picture" of what such an environment would look like. Then we can develop strategies for getting there. We are in the early stages of understanding the relationship between the environment and obesity, and we need substantially more research in this area. But, because of the urgency of the issue, we must also encourage intervention projects based on our best available data and based on creative ideas. We must collect data to evaluate success of this research.

How do we get from here to there?

Our current environment does not encourage healthy lifestyles, and it will take time to create one that does. In the meantime, Americans get fatter each year, and we will soon lose the opportunity to prevent obesity. Changing the environment is the best long-term solution, but it is a decades-long effort. In the short-term we have to also put efforts into helping people make behavior changes to keep the problem from worsening. If we could simply achieve small behavior changes to prevent further weight gain in the

population, this would give us a chance at "holding the line" while we have time to make environmental changes that can support and sustain the behavior changes.

America on the Move: A catalyst for Change

America on the Move (AOM; americaonthemove.org) is a grassroots, national initiative to inspire people to make two small changes to prevent further weight gain and improve lifestyle. AOM asks people to 1) walk an additional 2000 steps (about 1 mile) each day (burns about 100 kcal) , and; 2) choose one eating behavior each day that eliminates about 100 kcal. By engaging in these two simple behaviors, most of the population, regardless of age, can prevent further weight gain. For children, these changes can reduce excessive weight gain.

We can begin expanding the goals of America on the Move by working from the individual out. We can start by modifying the environment to make it easier to engage in the two simple behavior changes. Over time we can hopefully modify the environment sufficiently such that the equivalent of 2000 steps/day of walking and 100 kcal/day of less energy intake will happen with much less conscious effort. For example, the community of the future may make it more efficient to travel by foot or bicycle than by automobile. Further, the healthiest and least energy dense foods may be the "best deals" in restaurants, encouraging lower energy intake with little conscious effort. Our buildings and homes could be designed to maximize physical activity – all requiring little conscious effort on the part of the person.

Programs like America on the Move can be catalysts to get from here to there. The small changes message inspires individuals to begin to make small changes to improve lifestyle. At the same time, it allows the private sector to also begin making

small changes to help support and sustain the small changes being made by individuals. Over time we may be able to shift the emphasis more from individual behavior to the environment. It is unlikely that we will be able to change the environment to such a degree that individual behavior change will be unnecessary. The healthy community of the future will likely involve efforts directed both to modifying individual behavior change and the environment.

Summary

Recognition of the role of the environment in facilitating obesity is an exciting advancement in our quest to reverse the epidemic of obesity. The next years should bring a greater understanding of how the environment affects behaviors that impact obesity and new strategies to change components of the environment to facilitate healthy lifestyles. Understanding and changing the built environment has enormous possibilities to help, but we must understand that the built environment is only one part of a bigger environment that includes how we have constructed our society. While the task we face is daunting, success will only come if we can envision what a future state would look like and develop strategies to get us there.

References

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